



# UNITED STATES PATENT AND TRADEMARK OFFICE

A

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/062,870	01/31/2002	Huimin Chiu	SUN-P7343	2196

32291 7590 07/18/2005

MARTINE PENILLA & GENCARELLA, LLP  
710 LAKEWAY DRIVE  
SUITE 200  
SUNNYVALE, CA 94085

EXAMINER
----------

NGUYEN, QUANG N

ART UNIT	PAPER NUMBER
----------	--------------

2141

DATE MAILED: 07/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/062,870

Applicant(s)

CHIU ET AL.

Examiner

Quang N Nguyen

Art Unit

2141

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address.--

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,4-7,9-12,14-17,19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-7,9-12,14-17,19 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Detailed Action***

1. This Office Action is in response to the Amendment filed on 06/16/2005. Claims 1, 4, 6, 9, 11, 14, 16 and 19 have been amended. Claims 3, 8, 13 and 18 have been cancelled. Claims 1-2, 4-7, 9-12, 14-17 and 19-20 remain for examination.

***Drawings***

2. Figures 1-2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1-2, 4-7, 9-12, 14-17 and 19-20 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in the Background of the Invention, in view of Haviv (US 2002/0059451 A1).**

5. As to claim 1, **AAPA** teaches in **Fig. 1**, a system for exchanging data, comprising:

a Network File System component for generating a file request in response to a system call (*NFS 140 generates a file request and forwards the request to the External Data Representation (XDR) layer 150*) (page 3, lines 2-4);

an External Data Representation component for describing the format of said file request (*XDR layer 150 is a representation layer standard which provides a common way of representing a set of data types over a network*) (page 3, lines 6-7);

a Remote Procedure Call component for initiating said file request with a remotely located computer system (*RPC 160 provides a mechanism for one host to make a procedure call that appears to be part of the local process but is really executed remotely on another computer on the network*) (page 3, lines 10-12).

However, **AAPA** does not explicitly teach a unifying layer for communicating said Remote Procedure Call with one of a plurality of transport layer Remote Direct Memory Access implementations used to exchange data with said remotely located computer system, wherein the unifying layer isolating the Network File System component, the

application, the External Data Representation component and the Remote Procedure Call component from modifications to enable the plurality of transport layer Remote Direct Memory Access implementations, the unifying layer including, a first component for converting said Remote Procedure Call to a Remote Direct Memory Access formatted message; and a second component for communicating said Remote Direct Memory Access formatted message to a particular transport layer Remote Direct Memory Access implementation.

In a related art, **Haviv** teaches a system 10 maybe implemented in an RDMA network environment using multiple protocols such as Socket Direct Protocol (SDP), Direct Access File System (DAFS), and SCSI RDMA Protocol (SRP) over technologies such as Virtual Interfaces (VI) and InfiniBand (IB), wherein a kernel software element that may receive RDMA operation (*such as moving memory blocks to and from the requestor*) without involving the higher-level layers and/or the application (*i.e., isolating the Network File System component, the application, the External Data Representation component and the Remote Procedure Call component from modifications*) (**Haviv, paragraph [0019]**). **Haviv** also teaches the direct flow of data between client 12 and server 14 could be implemented using RDMA mechanisms, wherein the communication hardware 36 of client computer 12 and server 14 includes new System Area Network (SAN) technology, for example Virtual Interfaces (VI), InfiniBand (IB), Fiber-Channel, SCSI, ATM, RDMA over TCP/IP network and even expanded Ethernet, to provide special communication capabilities of transferring data reliability directly from process to process (**Haviv, paragraph [0044]**), wherein an application interface 34 (*i.e., a*

*transport provider and/or a socket application)* maybe software adapted to convert the transactions and commands received in a new type protocol over technologies such as InfiniBand or Virtual Interface using RDMA operations to standard applications and/or session network layers of the OSI model and vice versa (*i.e., a first component for converting said Remote Procedure Call to a Remote Direct Memory Access formatted message*) (**Haviv, paragraphs [0049 and 0050]**); and adapted to send the converted commands and essential parameters to server 14 via the communication hardware 36 using new SAN technologies such as VI, IB, SCSI, ATM, RDMA over TCP/IP network and even expanded Ethernet (*i.e., a second component for communicating said Remote Direct Memory Access formatted message to a particular-transport layer Remote Direct Memory Access implementation*) (**Haviv, paragraph [0044, 0049 and 0050]**).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of **AAPA** and **Haviv** to include a unifying layer (*the communication hardware 36 layer of Haviv*) for communicating said Remote Procedure Call with a plurality of transport layer Remote Direct Memory Access implementations used to exchange data with said remotely located computer system as claimed since such methods were conventionally employed in the art to provide the system special communication capabilities of transferring data reliability directly from process to process (*such as moving memory blocks to and from the requestor*) without involving the higher-level layers and/or the application in order to free the processing unit of the receiving computer from involvement with the data transfer, thus speeding up overall computer operation (**Haviv, paragraph [0014]**).

6. As to claim 2, **AAPA-Haviv** teaches the system for exchanging data as recited in claim 1, wherein one of said plurality of Remote Direct Memory Access implementations is the Virtual Interface Architecture (**Haviv, paragraph [0044]**).

7. As to claim 4, **AAPA-Haviv** teaches the system of claim 3, further comprising a plurality of said second components for communicating said Remote Direct Memory Access formatted message to various transport layer Remote Direct Memory Access implementations (*a computer 30 may comprise one or more application interfaces 34 adapted to capture the commands and transactions, process them and then send them to multi-channel communication hardware 36*) (**Haviv, Fig. 3 and paragraph [0041]**).

8. As to claim 5, **AAPA-Haviv** teaches the system for exchanging data as recited in claim 4, wherein the Remote Direct Memory Access protocol is the default transport layer protocol for communicating said Remote Procedure Call (*system 10 maybe implemented in an RDMA network environment using protocols such as socket direct protocol "SDP", direct access file system "DAFS", and SCSI RDMA protocol "SRP" over technologies such as VI and IB*) (**Haviv, paragraphs [0019 and 0049]**).

9. Claims 6-10 are corresponding method claims of system claims 1-5; therefore, they are rejected under the same rationale.

Art Unit: 2141

10. Claims 11-15 are corresponding computer system claims of system claims 1-5; therefore, they are rejected under the same rationale.

11. Claims 16-20 are corresponding computer-usable medium claims of system claims 1-5; therefore, they are rejected under the same rationale.

### ***Response to Arguments***

12. In the remarks, Applicant argued in substance that,

(A) Prior Arts do not teach or suggest "formatting said of Remote Procedure Call is performed without modifications to the Network File System protocol or Remote Procedure Call", as claimed.

As to point (A), **Haviv** teaches a system 10 maybe implemented in an RDMA network environment using multiple protocols such as Socket Direct Protocol (SDP), Direct Access File System (DAFS), and SCSI RDMA Protocol (SRP) over technologies such as Virtual Interfaces (VI) and InfiniBand (IB), wherein the system 10 may integrate a light-weight software element with kernel-by-passing capabilities that may receive RDMA requests and may emulate the RDMA operation (such as moving memory blocks to and from the requestor) without involving the higher-level layers and/or the application (i.e., isolating the Network File System component, the application, the External Data Representation component and the Remote Procedure Call component from modifications) (Haviv, paragraph [0019, 0043 and 0044]).



13. Applicant's arguments as well as request for reconsideration filed on 06/16/2005 have been fully considered but they are not deemed to be persuasive.

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Art Unit: 2141

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quang N. Nguyen whose telephone number is (571) 272-3886.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's SPE, Rupal Dharia, can be reached at (571) 272-3880. The fax phone number for the organization is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
RUPAL DHARIA  
SUPERVISORY PATENT EXAMINER